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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,904	05/06/2002	Victor John Yannacone, Jr.	3305-012184	1012

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EXAMINER	
HORWAT, JENNIFER A	

ART UNIT	PAPER NUMBER
3768	

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/019,904	YANNACONE, JR. ET AL.	
	Examiner	Art Unit	
	Jennifer Horwat	3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 May 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 May 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/25/02* [redacted]
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1, 2, 4, 7, 14-17, 23, and 24 rejected under 35 U.S.C. 102(e) as being anticipated by Dickey, et al (US 6381488). Dickey discloses a device for analyzing tissue based on the rate at which the skin responds to a differential temperature stimulus. An imaging sensor obtains image of the skin (col 6, line 63) while the temperature of the skin is raised or lowered by a transient thermal source (col 6, lines 14-18). Information from early and late thermal images reveals "areas of the skin which return to equilibrium temperature at different rates" (col 3, lines 17-19). This sensor may be an infrared detector (claim 5). The data may be presented as an image wherein

intensity, contrast, and/or color are used to represent the IR values obtained (col 6, line 62 - col 7, line 5). As the rate of change, or the relaxation time of skin temperature (col 4), is being compared in subsequent frames of data, it is inherent that the comparison would be done between the same data point in each frame in order for the results obtained to be meaningful. The output of the thermal camera is analyzed by a processor (fig. 2, element 24) and the results are displayed on a display (fig. 2, element 25). The thermal imaging camera detects radiation emitted by pixels making up a given region of skin surface and obtains frames of data at periodic time intervals (col 4, lines 55-62). It is inherent that a detector will detect the smallest element in its field-of-view that it is possible for it to detect, which is reflected in the inherent resolution of the system.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3, 5, 6, 10, 12, 13, 21, 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Dickey in view of Liu, et al (US 6023637). Dickey, as discussed above, substantially discloses the invention as claimed, however fails to disclose adjusting for absolute temperature and the use of a mirror in obtaining data. Liu, et al. also discloses a method and apparatus for thermal imaging and additionally discloses

that the intensity is adjusted to compensate for variance in base levels of intensity of thermal radiation from patient to patient (col 13, lines 9-12), which would advantageously provide the ability to compare data between patients. Liu further discloses alternatives available for the sensor, such as a single point infrared sensor or either a linear or two-dimensional array of sensors. The use of an array of sensors provides a reduction in sampling time, as multiple optels are acquired at substantially the same time as opposed to using a single point sensor where radiation is measured sequentially from each optel (col 10, lines 29-46). A scanner mirror (fig. 11, element 130) is used to focus radiation obtained from the patient to the detection system. The system may produce three-dimensional images (col 11, line 43). This system may be used in the detection of tumors, which is an abnormal growth of tissue or a neoplastic disease process. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Dickey in light of the teachings of the reference by Liu to include simultaneous detection of an array as well as a mirror to allow sampling of portions of the patient not in the field of view of the detector system without moving the entire detector system to a new field of view, which would both reduce sampling time.

5. Claims 8 and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Dickey in view of Webber (US 6081577). Dickey, as discussed above, substantially discloses the invention as claimed, however fails to explicitly disclose the use of a marker on the patient. Webber discloses a three-dimensional imaging system that may be practiced using infrared light (col 2, line 59). Additionally, Webber discloses the used

of fiducial markers which may be held in a fixed position relative to a selected object, such as a patient, or may be directly attached to the object (col 7, lines 32-35). In order for a fiducial marker to be seen in an image it must have emissivity different than that of the patient. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Dickey in light of the teachings in the reference by Webber to include fiducial markers in order to aid in a variety of image processing techniques well known in the art, such as registration, three-dimensional reconstruction, or determination of location of a tumor.

6. Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Dickey in view of Liu as applied to claim 10 above, and further in view of Nelson, et al (US 6216540). Dickey in view of Liu, as discussed above, substantially discloses the invention as claimed, however fails to disclose the use of a grid. Nelson also discloses a system and method for thermal imaging of an object and further discloses the use of a grid. Nelson teaches that image quality may be improved through the use of a collimation grid (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Dickey in view of Liu further in light of the teachings of Nelson to include a grid to provide improved image quality.

7. Claim 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Dickey in view of Parker (US 5533139). Dickey, as discussed above, substantially discloses the invention as claimed, however fails to disclose logarithmic image acquisition. Parker also discloses an infrared imaging system and additionally discloses the use of real time logarithmic image acquisition (col 3, lines 5-8). It would have been obvious to one of

ordinary skill in the art at the time of the invention to modify the disclosure of Dickey in light of the teachings of Parker to include logarithmic image acquisition to reduce overall image storage requirements while still obtaining the most data at the beginning where the largest changes in temperature are occurring.

8. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickey in view of Gordon, et al (US 5692510). Dickey, as discussed above, substantially discloses the invention as claimed, however fails to disclose the use of synchronized acquisition. Gordon also discloses a thermal imaging system and further discloses that the end-diastolic images were selected to be stored by the system based on a triggering system synchronized by an ECG R-wave (col 6, lines 29-34). The stored frames, therefore, were separated by at least one frame of data that was not stored, such as those images acquired during systole. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Dickey in light of the teachings of Gordon to use synchronized data acquisition to, as Gordon states, reduce motion artifacts.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Parsons, et al teaches a method of note.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Horwat whose telephone number is (571) 272-2811. The examiner can normally be reached on M-Th 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on (571) 272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jah
7/7/06

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